

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification <sup>7</sup> : <b>A61K 7/48, A47K 10/16</b></p>	<p><b>A1</b></p>	<p>(11) International Publication Number: <b>WO 00/56277</b> (43) International Publication Date: 28 September 2000 (28.09.00)</p>
<p>(21) International Application Number: PCT/EP00/02022 (22) International Filing Date: 8 March 2000 (08.03.00) (30) Priority Data: <i>US case abandoned</i> 60/124,938 18 March 1999 (18.03.99) US (71) Applicant (for AE AU BB CA CY GB GD GH GM IE IL KE LC LK LS MN MW NZ SD SG SL SZ TT TZ UG ZA ZW only): UNILEVER PLC [GB/GB]; Unilever House, Blackfriars, London EC4P 4BQ (GB). (71) Applicant (for all designated States except AE AU BB CA CY GB GD GH GM IE IL IN KE LC LK LS MN MW NZ SD SG SL SZ TT TZ UG ZA ZW): UNILEVER NV [NL/NL]; Weena 455, NL-3013 AL Rotterdam (NL). (71) Applicant (for IN only): HINDUSTAN LEVER LIMITED [IN/IN]; Hindustan Lever House, 165/166 Backbay Reclamation, Maharashtra, 400 020 Mumbai (IN).</p>		<p>(72) Inventors: SLAVTCHEFF, Craig, Stephen; Unilever Home &amp; Personal Care USA, 40 Merritt Boulevard, Trumbull, CT 06611 (US). ZNAIDEN, Alexander, Paul; Nippon Lever B.V., Utsunomiya Factory/Innovation Centre, 38 Haga-dai, Hago-cho, Haga-gun, Tochigi 321-33 (JP). KANGA, Vispi, Dorab; Unilever Research U.S. Inc., 45 River Road, Edgewater, NJ 07020 (US). (74) Agent: ELLIOTT, Peter, William; Unilever PLC, Patent Department, Colworth House, Sharnbrook, Bedford, Bedfordshire MK44 1LQ (GB). (81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  Published With international search report.</p>
<p>(54) Title: COSMETIC TOWELETTES (57) Abstract A disposable towelette is provided which includes a flexible substrate such as a cellulosic tissue impregnated with an astringent salt of a metal selected from aluminum, zinc, zirconium or mixtures thereof delivered in a cosmetically acceptable carrier vehicle. There is further provided a method for removing sebum and reducing perceived oil and greasiness by wiping the skin with the impregnated towelette.  <i>102 (a) for</i> <i>1-50%</i> <i>pet ant</i> <i>+ silica</i> <i>18 - 20</i> <i>22 - 44</i></p>		

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon			PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

- 1 -

**COSMETIC TOWELETTES****BACKGROUND OF THE INVENTION**

5

**Field of the Invention**

The invention concerns single use towelettes for cosmetically removing sebum from facial surfaces.

10

**The Related Art**

Sebum is produced by the disruption of the cells in which it is formed (in the basal layer of the gland). This function may be termed holocrine secretion. Being liquid inside the duct and hair follicle, sebum diffuses up and down the follicular canal. Upon reaching the skin surface it combines with epithelial lipids (from the keratinizing cells) and emulsifies as an oily liquid with water from the sweat glands. In this way a semi-solid, slightly acid, hydrophilic film is formed on the skin and in the hair follicles. The quantity of sebum produced is directly proportional to the size of the gland.

25 The rate of sebum production varies in different individuals, some having oilier skins than others. Male sex hormones increase sebum production. Increased temperature also increases production.

- 2 -

The literature is replete with methods and compositions for eliminating, controlling or at least reducing the levels of skin oils and greasiness. None have proved totally satisfactory.

5

- U.S. Patent 5,403,588 (Santa Ana, Jr.) discloses a body deodorizing composition consisting essentially of aluminum chloride in a carrier mixture of 70% isopropyl alcohol and acetone solution. The composition is impregnated into  
10 absorbent cotton pads which are packaged in individual pouches. Rubbing the saturated cotton pad on the skin, preferably in the underarm area, provides a cleansing and removes substances which contribute to body odor.
- 15 JP 08 188517 and JP 59 164712 both to Kanebo report that Baker's yeast extract and levulinic acid, respectively are sebum secretion inhibitors. Astringent agents are suggested as further additives for formulations containing these inhibitors. Illustrative are substances such as citric,  
20 tartaric, lactic, malic acids as well as zinc phenol sulphionate and aluminum chloride or chlorohydroxide.

- Open questions with respect to the inhibitors is their effectiveness under conditions of high environmental  
25 humidity and temperature. Even with control of sebum, consumers many times perceive normal oiliness as being abnormal because of optical effects, sensorial signals and interaction with make-up and perspiration. Thus the problem is not merely the presentation of a sebum inhibitor but  
30 providing a system controlling both the underlying problem and the surface perception of that problem.

- 3 -

Accordingly, it is an object of the present invention to provide an improved method for managing skin oiliness and greasiness as well as solving related optical effects, sensorial sensation and interaction with make-up and perspiration.

Another object of the present invention is to provide a system that modulates the manner in which skin sebum is distributed on skin which impacts the perception of oiliness even under conditions of high environmental humidity and temperature.

These and other objects of the present invention will become more apparent from the following summary and detailed discussion which follow.

#### SUMMARY OF THE INVENTION

A disposable, towelette is provided for removing sebum from skin, the towelette including:

- (i) a substrate;
- (ii) an astringent salt; and
- (iii) a cosmetically acceptable vehicle for impregnating the astringent salt as a composition onto the substrate.

A method is also provided for removing sebum and for reducing perceived oiliness on skin, the method including:

- 4 -

(a) providing a towelette which is constituted of:

(i) a substrate;

(ii) an astringent salt; and

5 (iii) a cosmetically acceptable vehicle for  
impregnating the astringent salt as a  
composition onto the substrate; and

(b) wiping a surface of the skin with the towelette.

10

#### DETAILED DESCRIPTION OF THE INVENTION

Now it has been found that towelettes impregnated with  
astringent salts can efficiently remove sebum, oil and  
15 grease from the skin. Most especially it has been found  
that a consumer's perception of oiliness which may be  
related to other extrinsic factors such as optical effects,  
sensorial signals and interaction of sebum with make-up and  
perspiration can be minimized by applying the astringent  
20 salts in a carrier on a substrate tissue. The product is  
preferably a single use towelette which provides a  
convenient, aesthetically pleasing, non-whitening surface  
treatment for the skin. The term skin is meant to encompass  
all external areas of the body including scalp and hair.

25 The uniformly impregnated towelettes distribute the  
astringent salt composition on the skin in a much more even  
manner than fluid, gel or stick products. The perception of  
oiliness removal is thereby much improved.

30 A first necessary aspect of the present invention is that of  
a substrate. Preferably the substrate is a water insoluble

- 5 -

substance. By "water insoluble" is meant that the substrate does not dissolve in or readily break apart upon immersion in water. Without being limited by theory, it is believed that the substrate serves to more evenly distribute the sebum controlling astringent salts across a wide area of the skin being so treated. Simultaneously the substrate serves to absorb excess oil and grease. Likewise, the substrate removes the make-up and perspiration which would ordinarily enhance a consumer's perception of oily skin. In these ways the substrate and astringent salts interact with one another to provide the many benefits of this invention. Another advantage of the substrate in combination with the astringent salts is that former help the astringent salts penetrate the sebaceous glands. The substrate is also much better than a mere liquid or gel formulation in the accurate application to the skin and avoidance of sensitive areas such as inadvertently directing the astringent composition to areas of the eye thereby irritating same.

A wide variety of materials can be used as the substrate. The following nonlimiting characteristics are desirable: (i) sufficient wet strength for use, (ii) sufficient abrasivity, (iii) sufficient loft and porosity, (iv) sufficient thickness, (v) appropriate size, and (vi) non-reactive with the astringent salt composition.

Nonlimiting examples of suitable substrates which meet the above criteria include nonwoven substrates, woven substrates, hydroentangled substrates, air entangled substrates and the like. Preferred embodiments employ nonwoven substrates since they are economical and readily

- 6 -

- available in a variety of materials. By nonwoven is meant that the layer is comprised of fibers which are not woven into a fabric but rather are formed into a sheet, particularly a tissue. The fibers can either be random
- 5 (i.e., randomly aligned) or they can be carded (i.e. combed to be oriented in primarily one direction). Furthermore, the nonwoven substrate can be composed of a combination of layers of random and carded fibers.
- 10 Nonwoven substrates may be comprised of a variety of materials both natural and synthetic. By natural is meant that the materials are derived from plants, animals, insects or byproducts. By synthetic is meant that the materials are obtained primarily from various man-made materials or from
- 15 material that is usually a fibrous web comprising any of the common synthetic or natural textile-length fibers, or mixtures thereof.

- Nonlimiting examples of natural materials useful in the
- 20 present invention are silk fibers, keratin fibers and cellulosic fibers. Nonlimiting examples of keratin fibers include those selected from the group consisting of wool fibers, camel hair fibers, and the like. Nonlimiting examples of cellulosic fibers include those selected from
- 25 the group consisting of wood pulp fibers, cotton fibers, hemp fibers, jute fibers, flax fibers, and mixtures thereof. Wood pulp fibers are preferred while all cotton fibers (e.g. cotton pads) are normally avoided.



- 7 -

Nonlimiting examples of synthetic materials useful in the present invention include those selected from the group consisting of acetate fibers, acrylic fibers, cellulose ester fibers, modacrylic fibers, polyamide fibers, polyester  
5 fibers, polyolefin fibers, polyvinyl alcohol fibers, rayon fibers and mixtures thereof. Examples of some of these synthetic materials include acrylics such as Acrilan<sup>®</sup>, Creslan<sup>®</sup>, and the acrylonitrile-based fiber, Orlon<sup>®</sup>; cellulose ester fibers such as cellulose acetate, Arnel<sup>®</sup>,  
10 and Acele<sup>®</sup>; polyamides such as Nylons (e.g., Nylon 6, Nylon 66, Nylon 610 and the like); polyesters such as Fortrel<sup>®</sup>, Kodel<sup>®</sup>, and the polyethylene terephthalate fibers, Dacron<sup>®</sup>; polyolefins such as polypropylene, polyethylene; polyvinyl acetate fibers and mixtures thereof.

15

Nonwoven substrates made from natural materials consist of webs or sheets most commonly formed on a fine wire screen from a liquid suspension of the fibers.

20 Substrates made from natural materials useful in the present invention can be obtained from a wide variety of commercial sources. Nonlimiting examples of suitable commercially available paper layers useful herein include Airtex<sup>®</sup>, an embossed airlaid cellulosic layer having a base weight of  
25 about 71 gsy, available from James River Corporation, Green Bay, WI; and Walkisoft<sup>®</sup>, an embossed airlaid cellulosic having a base weight of about 75 gsy, available from Walkisoft U.S.A., Mount Holly, NC.

- 8 -

Nonwoven substrates made from synthetic materials useful in the present invention can also be obtained from a wide variety of commercial sources. Nonlimiting examples of

5 suitable nonwoven layer materials useful herein include HEF 40-047, an apertured hydroentangled material containing about 50% rayon and 50% polyester, and having a basis weight of about 43 grams per square yard (gsy), available from Veratec, Inc., Walpole, MA; HEF 140-102, an apertured

10 hydroentangled material containing about 50% rayon and 50% polyester, and having a basis weight of about 56 gsy, available from Veratec, Inc., Walpole, MA; Novenet<sup>®</sup> 149-191, a thermo-bonded grid patterned material containing about 69% rayon, about 25% polypropylene, and about 6% cotton, and

15 having a basis weight of about 100 gsy, available from Veratec, Inc., Walpole, MA; HEF Nubtex<sup>®</sup> 149-801, a nubbed, apertured hydroentangled material, containing about 100% polyester, and having a basis weight of about 70 gsy, available from Veratec, Inc. Walpole, MA; Keybak<sup>®</sup> 951V, a

20 dry formed apertured material, containing about 75% rayon, about 25% acrylic fibers, and having a basis weight of about 43 gsy, available from Chicopee Corporation, New Brunswick, NJ; Keybak<sup>®</sup> 1368, an apertured material, containing about 75% rayon, about 5% polyester, and having a basis weight of

25 about 39 gsy, available from Chicopee Corporation, New Brunswick, NJ; Duralace<sup>®</sup> 1236, an apertured, hydroentangled material, containing about 100% rayon, and having a basis weight from about 40 gsy to about 115 gsy, available from Chicopee Corporation, New Brunswick, NJ; Duralace<sup>®</sup> 5904, an

- 9 -

apertured, hydroentangled material, containing about 100% polyester, and having a basis weight from about 40 gsy to about 115 gsy, available from Chicopee Corporation, New Brunswick, NJ; Sontaro<sup>®</sup> 8868, a hydroentangled material,  
5 containing about 50% cellulose and about 50% polyester, and having a basis weight of about 60 gsy, available from Dupont Chemical Corp.

Most preferred as a towelette for purposes of this invention  
10 are non-woven substrates, especially blends of rayon/polyester and ratios of 10:90 to 90:10, preferably ratios of 20:80 to 80:20, optimally 40:60 to 60:40 by weight. A most useful towelette is a 70:30 rayon/polyester non-woven wipe article.

15

The substrate can be made into a wide variety of shapes and forms. Generally the substrate is in single use towelette form. Advantageously, the towelettes are folded in a Z-shaped formation. They may be interleaved with one another  
20 but preferably are not interleaved. The Z fold consists of a center panel flanked by upper and lower wing panels. The upper and lower wing panels are substantially of equal width and substantially half of a width of the center panel. Each towelette is folded medially in a direction orthogonal to  
25 that of the Z-shaped formation. Advantageously the size of the towelette may range in length from 10 to 40 cm, preferably from 15 to 30 cm, optimally from 18 to 24 cm. The width of the towelette may range from 8 to 30 cm, preferably from 10 to 25 cm, optimally from 15 to 20 cm.

30

- 10 -

Anywhere from 5 to 100, preferably from 10 to 50 single  
towelettes may be stored within a dispensing pouch,  
preferably a moisture impermeable pouch. During storage and  
between dispensing, the pouch is resealable, usually via an  
5 adhesive strip covering a dispensing opening. Single  
towelette containing pouches may also be employed.  
The substrates of the present invention can comprise two or  
more layers, each having a different texture and  
abrasiveness. The differing textures can result from the  
10 use of different combinations of materials or from the use  
of a substrate having a more abrasive side for exfoliation  
and a softer, absorbent side for gentle cleansing. In  
addition, separate layers of the substrate can be  
manufactured to have different colors, thereby helping the  
15 user to further distinguish the surfaces.

A second important element of the present invention is that  
of an astringent salt. These salts include organic and  
inorganic salts of aluminum, zirconium, zinc and mixtures  
20 thereof. The anion of the astringent salt may be a  
sulphate, sulphonate, chloride, chlorohydroxide, alum,  
formate, lactate, benzenesulphonate or phenolsulphonate.  
Suitable classes of the astringent salts include aluminum  
halides, aluminum hydroxyhalides, zirconyl oxyhalides,  
25 zirconyl hydroxyhalides, zinc chloride, zinc  
phenolsulphonate and mixtures thereof.

Exemplary aluminum salts include the aluminum hydroxyhalides  
having the general formula  $Al_2(OH)_xQ_yXH_2O$ , where Q is  
30 chlorine, bromine or iodine; x is about 2 to about 5; x=y is  
about 6, wherein x and y are not necessarily integers; and X

- 11 -

is about 1 to about 6. Exemplary zirconium compounds include zirconium oxy salts and zirconium hydroxy salts, also referred to as zirconyl salts and zirconyl hydroxy salts, and represented by the general empirical formula

5  $ZrO(OH)_{2-nz}L_z$ , where z varies from about 0.9 to about 2 and is not necessarily an integer; n is the valence of L; 2-nz is greater than or equal to 0; and L is selected from the group consisting of halides, nitrate, sulfonate, sulfate, and mixtures thereof.

10

Specific examples of astringent salts include, but are not limited to, aluminum bromohydrate, potassium alum, sodium aluminum chlorohydroxy lactate, aluminum sulfate, aluminum chlorohydrate, aluminum-zirconium polychlorohydrate  
15 complexed with glycine, aluminum-zirconium trichlorohydrate, aluminum-zirconium octachlorohydrate, aluminum sesquichlorohydrate, aluminum sesquichlorohydrate PG, aluminum chlorohydrate PEG, aluminum zirconium octachlorohydrate glycine complex, aluminum zirconium  
20 pentachlorohydrate glycine complex, aluminum zirconium tetrachlorohydrate glycine complex, aluminum zirconium trichlorohydrate glycine complex, aluminum chlorohydrate PG, zirconium chlorohydrate, aluminum dichlorohydrate, aluminum dichlorohydrate PEG, aluminum dichlorohydrate PG, aluminum  
25 sesquichlorohydrate PG, aluminum chloride, aluminum zirconium pentachlorohydrate, and mixtures thereof.

Astringent salts of the present invention may range in amounts from about 1 to about 50%, preferably from about 8  
30 to about 35%, optimally from about 12 to about 18% by weight of the total composition which impregnates the substrate.

- 12 -

Other materials benefiting control of oily skin such as water insoluble particulates may also be incorporated into compositions of this invention. They include: silica  
5 zeolite, diatomaceous earth, polyethylene, microporous particles and combinations thereof. These further materials may be present in amounts from about 0.1 to about 30%, preferably from about 0.5 to about 10% by weight of the composition.

10

The amount of impregnating composition relative to the substrate may range from about 20:1 to 1:20, preferably from 10:1 to about 1:10 and optimally from about 2:1 to about 1:2 by weight.

15

Astringent salts are normally very drying and leave the skin with a taut unpleasant feeling. These salts also tend to leave a white aesthetically displeasing layer on the skin surface. Problems of drying and whitening can be overcome  
20 by including a polyol within the impregnating compositions of this invention. Representative polyols include glycerine, diglycerine, polyalkylene glycols and more preferably alkylene polyols and their derivatives including propylene glycol, dipropylene glycol, polypropylene glycol,  
25 polyethylene glycol and derivatives thereof, sorbitol, hydroxypropyl sorbitol, hexylene glycol, 1,2-butylene glycol, 1,2,6-hexanetriol, isoprene glycol, ethoxylated glycerol, propoxylated glycerol and mixtures thereof. The most preferred is 2-methyl-1,3-propanediol available as MP  
30 Diol from the Arco Chemical Company. Amounts of the polyol may range from about 0.5 to about 95%, preferably from about

- 13 -

1 to about 50%, more preferably from about 1.5 to 20%, optimally from about 3 to about 10% by weight of the impregnating composition.

- 5 A variety of cosmetically acceptable carriers may be employed although the carrier normally will be a fluid, particularly water. Less preferred but suitable are solid carriers such as dry encapsulates (e.g. polysaccharides, polyurethanes, polyacrylates, polyvinylacetates) enrobing
- 10 the astringent salts. Illustrative are microporous beads available from Advanced Polymer Systems Inc. under the trademark Microsponge<sup>®</sup> and a variety of other cross-linked polyacrylate superabsorbent beads.
- 15 Amounts of the carrier vehicle may range from about 0.5 to about 99%, preferably from about 1 to about 80%, more preferably from about 50 to about 70%, optimally from about 65 to 75% by weight of the impregnating composition.
- 20 Preservatives can desirably be incorporated into the cosmetic compositions of this invention to protect against the growth of potentially harmful microorganisms. Suitable traditional preservatives for compositions of this invention are alkyl esters of para-hydroxybenzoic acid. Other
- 25 preservatives which have more recently come into use include hydantoin derivatives, propionate salts, and a variety of quaternary ammonium compounds. Cosmetic chemists are familiar with appropriate preservatives and routinely choose them to satisfy the preservative challenge test and to
- 30 provide product stability. Particularly preferred preservatives are phenoxyethanol, methyl paraben, propyl

- 14 -

paraben, imidazolidinyl urea, sodium dehydroacetate and benzyl alcohol. The preservatives should be selected having regard for the use of the composition and possible incompatibilities between the preservatives and other ingredients in the composition. Preservatives are preferably employed in amounts ranging from 0.01% to 2% by weight of the composition.

Compositions of the present invention may further include herbal extracts. Illustrative extracts include Roman Chamomile, Green Tea, Scullcap, Nettle Root, Swertia Japonica, Fennel and Aloe Vera extracts. Amount of each of the extracts may range from about 0.001 to about 1%, preferably from about 0.01 to about 0.5%, optimally from about 0.05 to about 0.2% by weight of a composition.

Minor adjunct ingredients may also be present in the compositions. Among these may be vitamins such as Vitamin E Acetate, Vitamin C, Vitamin A Palmitate, Panthenol and any of the Vitamin B complexes. Anti-irritant agents may also be present including those of alpha-bisabolol and potassium glycyhrizinate, each vitamin or anti-irritant agent being present in amounts ranging from about 0.001 to about 0.5%, preferably from about 0.01 to about 0.1% by weight of the composition.

Other adjunct ingredients include such oil control agents as beta-hydroxy acids (particularly salicylic acid), anti-microbials (particularly triclosan), vasoactive compounds (particularly sennosides) and combinations thereof in



- 15 -

amounts ranging from about 0.1 to about 10% by weight of the composition.

Emulsifiers may also be incorporated into compositions of this invention. These emulsifiers may be anionic, nonionic, cationic, amphoteric and combinations thereof. Useful nonionic type emulsifiers include the C<sub>10</sub>-C<sub>20</sub> fatty alcohol or acid hydrophobes condensed with from 2 to 100 moles of ethylene oxide or propylene oxide per mole of hydrophobe; C<sub>2</sub>-C<sub>10</sub> alkyl phenols condensed with from 2 to 20 moles of alkylene oxide; mono- and di-fatty acid esters of ethylene glycol; fatty acid monoglyceride; sorbitan, mono- and di-C<sub>8</sub>-C<sub>20</sub> fatty acids; block copolymers (ethylene oxide/propylene oxide); and polyoxyethylene sorbitan as well as combinations thereof. Alkyl polyglycosides and saccharide fatty amides (e.g. methyl gluconamides) are also suitable nonionic emulsifiers. Particularly preferred as the emulsifier is a hydrogenated castor wax alkoxyated with 40 moles ethylene oxide, available commercially as Cremophore RH-40<sup>®</sup>.

Mild emulsifiers of the anionic and amphoteric type may also be employed. Particularly preferred anionic examples include lauroamphoacetate salts and sarcosinate salts. Preferred amphoterics include cocamidopropylbetaine and dimethylbetaine.

Amounts of the emulsifiers may range from about 0.05 to about 20%, preferably from about 0.1 to about 5%, optimally from about 0.5 to about 0.8% by weight.

- 16 -

Compositions of this invention will generally not contain levulinic acid, salts thereof, Baker's yeast or even acetone at levels to influence activity performance. These

5 formulations may involve a range of pH although it is preferred to have a relatively low pH, for instance, a pH from about 2 to about 6.5, preferably from about 2.5 to about 4.5.

10 The following examples will more fully illustrate the embodiments of this invention. All parts, percentages and proportions referred to herein and in the appended claims are by weight unless otherwise illustrated.

15 **EXAMPLES 1-8**

Table I provides a listing of formulations which were prepared for impregnation into a cellulosic substrate forming a towelette. The pH of the resulting composition

20 solutions range from about 2.8 to about 3.

- 17 -

**TABLE I**

INGREDIENT	EXAMPLE (WEIGHT %)							
	1	2	3	4	5	6	7	8
Water	67.52	64.52	64.52	37.48	34.48	34.48	37.48	37.48
Aluminum Zirconium Chlorohydrate Glycinate (67% Aqueous Solution)	22.50	22.50	22.50	55.54	55.54	55.54	55.54	55.54
Roman Chamomile Extract	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Green Tea Extract	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Scullcap Extract	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Nettle Root Extract	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Swertia Japonica	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Fennel	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Aloe Vera Extract	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Glycerine	1.50	1.50	--	--	--	--	--	--
Diglycerine	1.50	1.50	--	--	--	--	--	--
Dimethicone Copolyol	--	3.00	3.00	--	--	--	--	--
PPG-5 Ceteth-20 (Procetyl AWS )	--	--	3.00	1.00	2.00	--	--	--
PPG-10 Butane Diol	--	--	3.00	1.00	2.00	3.00	--	3.00
MP Diol Glycol	3.00	3.00	3.00	1.00	2.00	3.00	3.00	--
Phenonip	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Benzyl Alcohol	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
PEG-40 Hydrogenated Castor Oil	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Fragrance	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Hexylene Glycol	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Alpha Bisabolol	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03

**EXAMPLE 9**

5

A clinical study was performed to evaluate the effectiveness of towelettes according to the present invention. Six panelists were chosen. Sebum on the facial areas of the panelists were measured by a sebumeter device.

- 18 -

The protocol involved baseline readings on left and right cheek areas before and after washing. Two sites on the left cheek of each panelist were left untreated as control areas. Two sites on the right cheek of each panelist were treated  
5 with a rayon/polyester towelette impregnated with a 15% aluminum zirconium chlorohydrate glycinate salt solution. See formulation under Example 3. The impregnated towelette was wiped over the right cheek test sites five minutes after  
initial baseline readings.

10

Sebumeter values were taken at two hours, four hours and six hours subsequent to treatment. Sebum reduction relative to the untreated control cheek averaged respectively 8%, 45% and 16% over the time period for an average of the six  
15 member panel.

The foregoing description and examples illustrate selected embodiments of the present invention.

- 19 -

**CLAIMS**

1. A disposable towelette for removing sebum from skin,  
the towelette comprising:  
5  
(i) a substrate;  
(ii) an astringent salt; and  
(iii) a cosmetically acceptable vehicle for  
impregnating the astringent salt as a  
10 composition onto the substrate.
2. The towelette according to claim 1 wherein the  
astringent is selected from the group consisting of  
aluminum chlorohydrate, aluminum zirconyl chlorohydrate  
15 glycinate, aluminum chloride and combinations thereof.
3. The towelette according to claim 1 or 2 wherein the  
astringent salt is zinc chloride, zinc phenol  
sulphonate and mixtures thereof.  
20
4. The towelette according to any preceding claim wherein  
the vehicle is water.
5. The towelette according to any preceding claim wherein  
25 the composition further comprises from 0.5 to 95% of a  
polyol by weight of the impregnating composition.
6. The towelette according to claim 5 wherein the polyol  
is selected from the group consisting of glycerine,  
30 diglycerine, hexylene glycol, 2-methyl-1,3-propanediol,  
PPG-10 butanediol and mixtures thereof.

- 20 -

7. The towelette according to claim 5 or 6 wherein the amount of polyol present ranges from 1.5 to 20% by weight of the impregnating composition.
- 5 8. The towelette according to any preceding claim wherein the substrate is a blend of rayon/polyester in a weight ratio ranging from 10:90 to 90:10.
- 10 9. The towelette according to any preceding claim wherein the substrate is a tissue folded in a Z-shaped formation.
- 15 10. A cosmetic method for removing sebum and reducing perceived oiliness on skin, the method comprising:
- (a) providing a towelette comprising:
- 20 (i) a substrate;
- (ii) an astringent salt; and
- (iii) a cosmetically acceptable vehicle for impregnating the astringent salt as a composition onto the substrate; and
- 25 (b) wiping a surface of the skin with the towelette.

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 00/02022

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 A61K7/48 A47K10/16

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 A61K A47K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, PAJ, EPO-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 856 941 A (TURNER ) 24 December 1974 (1974-12-24) abstract column 2, line 7 - line 18 column 4, line 19 - line 36 claims 1,4-6	1-6,10
Y	—	8,9
Y	DATABASE WPI Week 198929 Derwent Publications Ltd., London, GB; AN 1989-210829 XP002141502 & JP 01 148537 A (ASAHI CHEM. IND. CO. LTD.), 9 June 1989 (1989-06-09) abstract	8

-/-

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

29 June 2000

Date of mailing of the international search report

10/07/2000

Name and mailing address of the ISA  
European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Alvarez Alvarez, C

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 00/02022

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	FR 2 304 311 A (VEREINIGTE PAPIERWERKE SCHICKEDANZ & CO.) 15 October 1976 (1976-10-15) abstract; figures 1,2	9
X	US 5 403 588 A (CESAREO T. SANTA ANA JR.) 4 April 1995 (1995-04-04) cited in the application the whole document	1,2,10



# INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter.      nal Application No

PCT/EP 00/02022

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 3856941	A	24-12-1974	CA 1003754 A JP 49047543 A	18-01-1977 08-05-1974
JP 1148537	A	09-06-1989	NONE	
FR 2304311	A	15-10-1976	DE 2512140 A	07-10-1976
US 5403588	A	04-04-1995	NONE	